ABSTRACT OF THE DISCLOSURE

Solid waste resource recovery in space is effected by pyrolysis processing, to produce light gases as the main products (CH_4, H_2, CO_2, CO, H_2O, NH_3) and a reactive carbon-rich char as the main byproduct. Significant amounts of liquid products are formed under less severe pyrolysis conditions, and are cracked almost completely to gases as the temperature is raised. A primary pyrolysis model for the composite mixture is based on an existing model for whole biomass materials, and an artificial neural network models the changes in gas composition with the severity of pyrolysis conditions.

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